What is claimed is:

1. A light emitting apparatus, comprising:

a light emitting element with an emission wavelength in the range of 360 to 550 nm; and

a rare-earth element doped oxide nitride phosphor;

wherein part of light radiated from the light emitting element is wavelength-converted by the phosphor.

2. The light emitting apparatus according to claim 1, wherein;

the emission wavelength is in the range of 450 to 550 nm, and the light emitting apparatus radiates white light generated by a mixture of the wavelength-converted light and the other part of light radiated from the light emitting element.

3. The light emitting apparatus according to claim 1, wherein;

the oxide nitride phosphor is of oxide nitride that contains α-sialon as matrix material.

4. The light emitting apparatus according to claim 1, wherein;

the phosphor is in the form of powder or particles and is contained in a light transmitting material.

5. The light emitting apparatus according to claim 1, wherein;

the light emitting element is III group nitride system compound semiconductor emitting element.

6. The light emitting apparatus according to claim 1, wherein;

the phosphor is represented by a general formula: $Me_xSi_{12-(m+n)}Al_{(m+n)}O_nN_{16-n}:Re1_yRe2_z$, part or all of metal (Me), where Me is one or more of Li, Ca, Mg, Y and lanthanide metals except for La and Ce, to be dissolved into α-sialon being replaced by lanthanide metal (Re1), where Re1 is one or more of Ce, Pr, Eu, Tb, Yb and Er, as luminescence center, or replaced by lanthanide metal (Re1) and lanthanide metal (Re2), where Re2 is Dy, co-activator.

7. The light emitting apparatus according to claim 6, wherein;

the phosphor satisfies, when the metal (Me) is bivalent, $0.6<m<3.0$ and $0\leqq n<1.5$ in the general formula.

8. The light emitting apparatus according to claim 6, wherein;

the phosphor satisfies, when the metal (Me) is trivalent,

$0.9<m<4.5$ and $0 \leqq n<1.5$ in the general formula.

9. The light emitting apparatus according to claim 6, wherein;

the phosphor is $Me_xSi_{9.75}Al_{2.25}O_{0.75}N_{15.25}:Re1_yRe2_z$ to satisfy $m=1.5$ and $n=0.75$ in the general formula, where $0.3<x+y<0.75$ and $0.01<y+z<0.7$, where $y>0.01$, $0.0 \leqq z<0.1$, are satisfied.

10. The light emitting apparatus according to claim 6, wherein;

the phosphor is $Me_xSi_{9.75}Al_{2.25}O_{0.75}N_{15.25}:Re1_yRe2_z$ to satisfy $m=1.5$ and $n=0.75$ in the general formula, where $0.3<x+y+z<1.5$, $0.01<y<0.7$ and $0.0 \leqq z<0.1$ are satisfied.

11. The light emitting apparatus according to claim 6, wherein;

the metal (Me) is calcium (Ca).

12. The light emitting apparatus according to claim 1, wherein;

the phosphor is sialon system phosphor powder that is composed of: α-sialon of 40 weight% or more and 90 weight% or less, the α-sialon being structured such that Ca site of Ca-α-sialon represented by: $(Ca_x, M_y)(Si, Al)_{12}(O, N)_{16}$ is partially replaced by metal (M); β-sialon of 5 weight% or more and 40

weight% or less; and unreacted silicon nitride of 5 weight% or more and 30 weight% or less, where M is metal that is one or more selected from Ce, Pr, Eu, Tb, Yb and Er and $0.05<(x+y)<0.3$, $0.02<x<0.27$ and $0.03<y<0.3$.

13. The light emitting apparatus according to claim 12, wherein:

the entire phosphor powder has a chemical composition that is in the range of three composition lines of Si_3N_4-a(M_2O_3·9AlN), Si_3N_4-b(CaO · 3AlN) and Si_3N_4-c(AlN · Al_2O_3), where $4x10^{-3}<a<4x10^{-2}$, $8x10^{-3}<b<8x10^{-2}$ and $10^{-2}<c<8x10^{-1}$ are satisfied.

14. A light emitting apparatus, comprising:

a light emitting element with an emission wavelength in the range of 360 to 550 nm; and

a cerium ion doped lanthanum silicon nitride phosphor;

wherein part of light radiated from the light emitting element is wavelength-converted by the phosphor.

15. The light emitting apparatus according to claim 14, wherein:

the phosphor is represented by: $La_{1-x}Si_3N_5:xCe$, where doping amount x is $0<x<1$ and cerium ion is doped to lanthanum site in solid dissolution replacement.

16. The light emitting apparatus according to claim 14, wherein:

the doping amount x is $0.1<x<0.5$ and the phosphor is ultraviolet ray excitation phosphor.

17. The light emitting apparatus according to claim 14, wherein:

the doping amount x is $0.0<x<0.2$, and the phosphor is electron beam excitation phosphor.

18. The light emitting apparatus according to claim 14, wherein:

the phosphor radiates blue light.

19. A light emitting method for a light emitting apparatus that comprises a light emitting element with an emission wavelength in the range of 360 to 550 nm and a rare-earth element doped oxide nitride phosphor, wherein part of light radiated from the light emitting element is wavelength-converted by the phosphor, and the light emitting apparatus radiates light generated by a mixture of wavelength-converted light and the other part of light radiated from the light emitting element, comprising the step of:

turning on intermittently the light emitting element.

20. A light emitting method for a light emitting apparatus that comprises a light emitting element with an emission wavelength in the range of 360 to 550 nm and a cerium ion doped lanthanum silicon nitride phosphor, wherein part of light radiated from the light emitting element is wavelength-converted by the phosphor, and the light emitting apparatus radiates light generated by a mixture of wavelength-converted light and the other part of light radiated from the light emitting element, comprising the step of:

turning on intermittently the light emitting element.

21. The light emitting method according to claim 19, wherein:

the color of the light radiated from the light emitting apparatus is adjusted by controlling the turn-on time of the light emitting element.

22. The light emitting method according to claim 20, wherein:

the color of the light radiated from the light emitting apparatus is adjusted by controlling the turn-on time of the light emitting element.

23. The light emitting method according to claim 19, wherein:

the emission wavelength is in the range of 450 to 550 nm,

and the light emitting apparatus radiates white light.

24. The light emitting method according to claim 20, wherein:

the emission wavelength is in the range of 450 to 550 nm, and the light emitting apparatus radiates white light.

25. The light emitting apparatus according to claim 19, wherein;

the light emitting element is III group nitride system compound semiconductor emitting element.

26. The light emitting apparatus according to claim 20, wherein;

the light emitting element is III group nitride system compound semiconductor emitting element.